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10/606,079	06/25/2003	Whalid Khairy Mohamed Ahmed	17977	4260

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EXAMINER	
HANNON, CHRISTIAN A	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,079	AHMED, WHALID KHAIRY MOHAMED	
	Examiner	Art Unit	
	Christian A. Hannon	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,22-25,28-42,44-47 and 50-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *44-47 and 51-53* is/are allowed.

6)☒ Claim(s) *1-17,19,22-25,28-42 and 50* is/are rejected.

7)☒ Claim(s) *18,20 and 37-39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is response to applicant's response filed on 02/08/2006. Claims 1-20, 21-25, 28-42, 44-47 & 50-53 are now pending in the present application. **This action is made final.**

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7,10-17,19,22-25,28-33,36,40-42 and 50 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimizu (US 6,914,943).

Regarding claim 1, Shimizu teaches a method for electromagnetic processing of an input wave comprising the steps of receiving a modified signal derived from two or more signals that represent said input wave when combined (Figure 11; Column 12, Lines 34-67; Column 13, Lines 1-4; Shimizu) and regulating said modified signal using at least one analog signal containing a characteristic of said two or more signals (Column 12, Lines 65-67; Column 13, Lines 1-4; Shimizu), said regulation being performed by at least one device or device segment for receiving at least one analog control signal (Column 13, Lines 1-4; Shimizu). Shimizu teaches that the gain of the amplifier can be adjusted by the analog signal indicative of a time shifted, amplitude, or

magnitude signal derived from the input wave. Furthermore the derived from two or more signals that represent the input wave when combined are the signals of the (1) amplitude and (2) I & Q portions (phase component) of the input wave.

In regards to claim 2, Shimizu teaches the method of claim 1, wherein said two or more signals are in quadrature with each other (Figure 11, Items I' & Q'; Shimizu).

With regard to claim 3, Shimizu teaches the method of claim 1, wherein said characteristic used to regulate said modified signal is magnitude, also known as an amplitude (Column 12, Lines 51-55; Column 13, Lines 1-4; Shimizu).

With respect to claim 4, Shimizu teaches the method of claim 1, further comprising the step of generating an output signal from said regulation of said modified signal, the examiner is noting the output from the device controlled by the D/A converter item 25 in figure 11, being input to the device controlled by D/A item 10 in figure 11, to serve as an output from the regulation of the modified signal.

Regarding claim 5, Shimizu teaches the method of claim 1, wherein said step of regulating said modified signal is performed using a plurality of segments. The examiner is interpreting the segments to be the segments of delaying and D/A conversion to the analog control signal to the power amplifier 9-2 in figure 11.

In regards to claim 6, Shimizu teaches the method of claim 5, wherein one or more of said segments is independently controlled as a power amplifier by a portion of said two or more signals that represent said input wave to contribute power to an output signal, Shimizu teaches that the portion in actuality controlling the power amplifier 9-2 is

the analog amplitude signal of the two or more signals that represent said input wave (Column 8, Lines 30-34; Shimizu).

With respect to claim 7, Shimizu teaches a method of claim 6, further comprising the step of generating an output signal by combining power outputted from one or more of said segments. As the amplifier 9-2 increases or combines power to make a stronger signal in relation to its input the examiner is interpreting the power amplifier 9-2 of figure 11 as the segment which accomplishes this.

In regards to claim 10, Shimizu teaches the method of claim 1, wherein said received modified signal contains only one of said two or more signals used to derive said modified signal, in fact Shimizu only receives the phase component (I & Q portion) of the input signal (Column 8, Lines 30-34; Shimizu) at the input of the amplifier 9-2 of figure 11.

Regarding claim 11, Shimizu teaches the method of claim 1, wherein said received modified signal is derived from a sign characteristic of at least one of said two or more signals that represent said input wave when combined (Column 8, Lines 30-44; Shimizu).

With regard to claim 12, Shimizu teaches the method of claim 1, wherein said modified signal is a carrier wave modulated by a characteristic of at least one of said two or more signals that represent said input wave when combined (Column 3, Lines 15-17; Shimizu).

In regards to claim 13, Shimizu teaches the method of claim 1 further comprising the step of generating the modified signal (Column 8, Lines 30-33; Shimizu).

Regarding claim 14, Shimizu teaches the method of claim 13, wherein said step of generating said modified signal comprises phase shifting a carrier wave to generate a phase shifted carrier wave (Figure 11, Item 1; Shimizu), mixing a characteristic, the phase, of said two or more signals that represent said input wave when combined with said carrier wave, and mixing a characteristic of another of said two or more signals that represent said input wave when combined with said phase shifted carrier wave (Column 8, Lines 17-67; Column 9, Lines 1-50; Shimizu).

In regards to claim 15, Shimizu teaches the method of claim 14, wherein said carrier wave and said phase shifted carrier wave have a relative phase difference of 90 degrees (Column 8, Lines 35-43; Shimizu).

With regard to claim 16, Shimizu teaches the method of claim 1, further comprising the step of generating said two or more signals that represent said input wave when combined (Column 8, Lines 30-33; Shimizu).

Regarding claim 17, Shimizu teaches the method of claim 16, further comprising the step of processing one or more of said two or more signals that represent said input wave when combined. In figure 11, the examiner is interpreting the phase of the input wave undergoing modulation at item 5, to be construed as 'processing.'

With respect to claim 19, Shimizu teaches wherein said electromagnetic processing of said input wave comprises RF modulation (Figure 11, Item 79; Shimizu).

Regarding claim 50, Shimizu teaches a method for transmitting an input wave comprising the steps of generating two or more signals that represent said input wave when combined (Figure 11, Item 1; Shimizu) modulating a carrier wave with at least one

characteristic (the phase sign) of at least one of said two or more signals to generate a modulated signal (Figure 11, Items 5 & 79; Shimizu) modulating a phase shifted carrier wave with a characteristic of another of said two or more signals to generate a phase shifted modulated signal (Figure 11, Item 9; Shimizu), inputting said modulated signal and said phase shifted modulated signal into an amplifier having at least one amplifying segment (Figure 11, Item 9-2; Shimizu) said at least one amplifying segment being operable as a power amplifier (Figure 11, Item 9-2; Shimizu). It is noted that the modulation of the phase shifted carrier wave is done by the variable gain device item 9 in figure 11 which uses the amplitude of the input signal to effect a gain change, or signal modulation.

In regards to claim 22, Shimizu teaches the method of claim 50, wherein said two or more signals comprise an in-phase and quadrature signal (Figure 11, Item I' & Q'; Shimizu).

With respect to claim 23, Shimizu teaches the method of claim 50, wherein said characteristic used to generate said analog control signal is magnitude, or amplitude (Figure 11, Item "AMPLITUDE SIGNAL"; Shimizu).

With regard to claim 24, Shimizu teaches the method of claim 50, wherein said characteristic used to modulate said carrier wave is sign, the examiner is interpreting the sign to be that of the respective phase sign of the I' and Q' signals in figure 11.

Regarding claim 25, Shimizu teaches the method of claim 50, wherein said carrier wave is an RF signal (Figure 11, Item 79, & "RF LOCAL SIGNAL"). The

examiner notes that at stage 79 in figure 11, the output signal is a an RF signal derived from the RF LOCAL SIGNAL carrier.

Regarding claim 28, Shimizu teaches an apparatus for electromagnetic processing of an input wave comprising an amplifier (Figure 11, Items 9, 9-2; Shimizu) having at least one amplifying segment for receiving a modified signal derived, the output of item 9 in figure 11, from two or more signals, the phase and amplitude of the input signal, that represent said input wave when combined and a control circuit (Figure 11, Item 9; Shimizu) operable to receive at least one analog control signal, the output of item 25 in figure 11, said control circuit for regulating at least one said modified signal across said amplifying segment using an analog signal containing a characteristic, the amplitude or magnitude of the input signal, of said two or more signals. The control circuit, variable gain device item 9 in figure 11, regulates its output to the power amplifier, amplifying segment, by using the amplitude, magnitude control signal of the input signal.

With regard to claim 29, Shimizu teaches the apparatus of claim 28, wherein said two or more signals are in quadrature with each other (Figure 11, Items I' & Q'; Shimizu).

In regards to claim 30, Shimizu teaches the apparatus of claim 28, wherein said characteristic sued to regulate said modified signal is magnitude (Figure 11, Item 'AMPLITUDE SIGNAL'; Shimizu).

Regarding claim 31, Shimizu teaches the apparatus of claim 28, further comprising an output circuit for generating an output signal from said regulation of said

modified signal (Figure 2, Items 101 & 102; Shimizu). The examiner is citing the use of the switch 102 in figure 2 and the antenna 101 in figure 2 to comprise an output circuit that takes the amplified signal and outputs the signal.

With regard to claim 32, Shimizu teaches the apparatus of claim 28, wherein said amplifier comprises a plurality of segments (Figure 11, Items 9 & 9-2; Shimizu).

Regarding claim 33, Shimizu teaches the apparatus of claim 32, wherein one or more of said segments comprises a power amplifier (Figure 11, Item 9-2; Shimizu).

With respect to claim 36, Shimizu teaches the apparatus of claim 28, wherein said received modified signal contains only one of said two or more signals used to derive said modified signal. In fact Shimizu shows that the received signal at item 9 in figure 11 is based only on the phase of the input signal until processing stage item 9 in figure 11 is completed.

Regarding claim 40, Shimizu teaches the apparatus of claim 28, further comprising a signal generator for generating said two or more signals that represent said input wave when combined (Figure 11, Item 1; Shimizu).

In regards to claim 41, Shimizu teaches the apparatus of claim 40, further comprising a signal processor for processing one or more of said two or more signals that represent said input wave when combined.(Column 13, Lines 23-36).

With regard to claim 42, Shimizu teaches the apparatus of claim 41, wherein said signal processor is programmed to do one or more selected from the group consisting of performing correction of an amplitude characteristic of a carrier wave used in said derivation of said modified signal, correction of a phase characteristic of a carrier wave

sued in said derivation of said modified signal, and filtering of one or more of said tow or more signals that represent said input wave when combined. Shimizu teaches at least filtering of one or more of said two or more signals that represent said input wave when combined (Column 13, Lines 24-25; Shimizu).

Claim Rejections - 35 USC § 103

3. Claims 8 & 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Jaeger et al (US 6,973,394).

Regarding claims 8 & 34 Shimizu teaches the method of claim 7 and the apparatus of claim 33, however Shimizu fails to teach wherein said step of generating an output signal by combining power is accomplished using one or more selected from the group consisting of power transformers, quarter-wave transmission lines, discrete LC components, and a Pi-network. However Jaeger et al teach that transformers can be used to combine the power of two signals (Column 4, Lines 57-60; Jaeger et al). It would have been obvious to combine the teachings of Shimizu with those of Jaeger et al, in order to provide for a readily available means to combine signal power.

4. Claims 9 & 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu in view of Sutardja et al (US 6,011,437).

Regarding claims 9 & 35, Shimizu teaches the method of claim 5 and the apparatus of claim 32, respectively. However Shimizu fails to teach wherein one or more of said segments is independently controlled as a current source by a portion of said two or more signals that represent said input wave to contribute current to an output signal. Sutardja et al teach one or more segments that is independently

controlled as a current source by a portion of a signal that represents a input wave to contribute current to an output signal (Column 2, Lines 5-15; Sutardja et al). It would have been obvious to combine the teachings of Shimizu and Sutardja et al in order to provide a means to singularly control the output of said segments to provide a more linear output.

Allowable Subject Matter

5. Claims 18, 20 & 37-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With regard to claim 18, Shimizu teaches the method of claim 17, however Shimizu fails to teach wherein said step of processing comprises one or more selected from the group consisting of performing correction of an amplitude characteristic of a carrier wave used in said derivation of said modified signal, correction of a phase characteristic of a carrier wave used in said derivation of said modified signal, and filtering of one or more of said two or more signals that represent said input wave when combined.

With respect to claim 20, Shimizu teaches the method of claim 1, however Shimizu fails to teach wherein said step of regulating said modified signal comprises regulating said modified signal using an analog control signal from one of said tow or more signals that represent said input wave when combined to generate at least one output signal component, regulating said modified signal using an analog control signal form another of said two or more signals that represent said input wave when combined

to generate at least one other output signal component and combining said at least one output signal component with said at least one other output signal component to generate an output signal.

In regards to claim 37, Shimizu teaches the apparatus of claim 28, further comprising a source of a carrier wave (Figure 12, Item 6; Shimizu), a phase shifter for phase shifting said carrier wave to generate a phase shifted carrier wave (Figure 12, Item 53; Shimizu), a mixer for mixing a characteristic of one of said two or more signals that represent said input wave when combined with said carrier wave (Figure 12, Item 51; Shimizu). However Shimizu fails to teach another mixer for mixing a characteristic of another of said two or more signals that represent said input wave when combined with said phase shifted carrier wave.

6. Claims 44-47, 51-53 are allowed.

In regards to claim 51, Shimizu teaches a method for transmitting an input wave comprising the steps of generating two or more signals that represent said input wave when combined, modulating a carrier wave with at least one characteristic of at least one of said tow or more signals to generate a modulated signal, modulating a phase shifted carrier wave, inputting said modulated signal and said phase shifted modulated signal into an amplifier having at least one amplifying segment, controlling said at least one amplifying segment with an analog control signal containing a characteristic of one of said two or more signals that represent said input wave when combined and a characteristic of another of said two or more signals that represent said input wave

when combined to generate at least one segment output (Column 8, Lines 17-67; Column 9, Lines 1-50; Shimizu). However Shimizu fails to teach where a characteristic of another of said two or more signals to generate a phase shifted modulated signal, and said at least one amplifying segment is operable as a current source.

With respect to claim 52, Shimizu teaches an apparatus for transmitting an input wave comprising a signal generator for generating two or more signals that represent said input wave when combined, a signal modulator for modulating a carrier wave with a characteristic of at least one of said two or more signals to generate a modulated signal and for modulating a phase shifted carrier wave with a characteristic of another of said two or more signals to generate a phase shifted modulated signal an amplifier having at least one amplifying segment for receiving said modulated signal and at least one other amplifying segment for receiving said phase shifted modulated signal, a controller for controlling said at least one amplifying segment with an analog signal containing a characteristic of one of said two or more signals and for controlling said at least one other amplifying segment with an analog signal containing a characteristic of another of said two or more signals to generate at least one segment output and an output circuit for transmitting an output signal based upon said at least one output segment (Column 8, Lines 17-67; Column 9, Lines 1-50; Shimizu). However Shimizu fails to teach said amplifying segments being operable as power amplifiers.

With respect to claim 53, Shimizu teaches an apparatus for transmitting an input wave comprising a signal generator for generating two or more signals that represent said input wave when combined, a signal modulator for modulating a carrier wave with a

characteristic of at least one of said two or more signals to generate a modulated signal and for modulating a phase shifted carrier wave with a characteristic of another of said two or more signals to generate a phase shifted modulated signal an amplifier having at least one amplifying segment for receiving said modulated signal and at least one other amplifying segment for receiving said phase shifted modulated signal, a controller for controlling said at least one amplifying segment with an analog signal containing a characteristic of one of said two or more signals and for controlling said at least one other amplifying segment with an analog signal containing a characteristic of another of said two or more signals to generate at least one segment output and an output circuit for transmitting an output signal based upon said at least one output segment (Column 8, Lines 17-67; Column 9, Lines 1-50; Shimizu). However Shimizu fails to teach said amplifying segments being operable as current sources.

Claims 44-47 are allowed as they are dependent on allowed independent claim 52.

Response to Arguments

7. Applicant's arguments with respect to claims 1-49 have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments, see page 13-14, filed 2/6/2006, with respect to claims 1-13,19,21-25,28-30,32,35,37-42,43-49 have been fully considered and are persuasive. The double patenting rejection of claims 1-13,19,21-25,28-30,32,35,37-42,43-49 has been withdrawn.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christian A. Hannon
April 3, 2006

QUOCHIEN B. VUONG
PRIMARY EXAMINER